Amendment to the specification:

Please amend the Abstract as follows:

~~Thermodynamic energy methods and systems that provides all electrical energy and heat needs of a single residential house, commercial business or office building. The system is small enough to be stored inside the house or building. The system can generate excess electrical energy which can be sold over a power grid and allow for the house owner, building owner or energy provider (utility company) to provide income. The method and system can have combined energy conversion efficiency up to approximately 97%. Components can include amorphous materials, and the mono-tube steam-generator boiler which is explosion proof when punctured, and only emits a puff of steam when punctured. The tubes can be built to pressure vessel code. The invention can use steam-generators to power A/C units, domestic hot water, hot water air space heaters, other loads such as pools and spas and underground piping to eliminate ice and snow. Additionally, the invention can be used to power vehicles such as cars, and the like. Other embodiments can use thermodynamic energy methods and systems that provides electrical energy and heat needs of a residence, commercial business, or office building, that include supertropically expanding ammonia vapor against a vacuum, as generated by chemosorption, in order to convert moderate amounts of heat into mechanical energy at high efficiencies. A supertropic package system can include a source of ammonia/water, a thermal generator for heating the source of ammonia/water and generating ammonia gas, a positive displacement device for expanding the gas, and generating electricity from a power source driven by the expander~~.

A closed loop system for generating mechanical energy at high efficiencies. The system can have a heating source, a superheater, an expander, a receiver, an absorber, a desorber, and regenerator with pumps and controls. The superheater heats a working fluid (a refrigerant or steam). A positive liquid/vapor expander expands a low temperature refrigerant, or steam vapor to the saturated state (having both liquid and vapor parts) utilizing a low-pressure sub-atmospheric exhaust sink. An absorber, generates a low-pressure sub-atmospheric sink using chemosorption which involves the exothermic reaction/absorption of ammonia refrigerant in water. The desorber is used to reconstitute inlet vapor (for reuse) and the regenerator recovers heat generated by chemosorption. The system can meet electrical power needs for residences, businesses or office buildings. The system can supply electrical energy to power grids, and can be an alternative power generation plants.

Please amend the paragraph on page 11 at lines 8-9 as follows:

Fig. ~~9A~~ 9 shows the condensate return pump(high pressure return pump) for the embodiment of Fig. 1.

Please add the following paragraph on page 11, between lines 9 and 10:

Fig. 10A shows a top view of the air conditioner unit and system of Fig. 1.

Please amend the paragraph starting on page 19, line 23 and ending on page 20 at line 7 as follows:

Figures 5A, 5B and 6 show an expander drive system based Scroll Labs "floating scroll" technology (see U.S. patent serial number 10/342,954 filed July 6, 2004, now U.S. Patent 6,758,659 to one of the inventors of the subject invention, which is incorporated by reference) for the subject invention. The scroll device 8, used as compressors, expanders and vacuum pumps, are well known in the art. In traditional scroll device there is a set of scrolls including one fixed scroll and one orbiting scroll making circular translation, orbiting motion, relative to the former to displace fluid. In a floating scroll device there are two sets of scrolls, front and rear scrolls. Each set of scrolls, front or rear, consists of a fixed scroll and an orbiting scroll. Floating scroll technology adopts dual scroll structure. Fig. 5A is a perspective view of the external appearance of a floating scroll expander 8. Fig. 5B is an exploded view of the expander 8 of Fig. 5A which shows the internal orbiting scroll of floating scroll expander.

Please amend the paragraph starting on page 34 at line 19 and ending on page 35 at line 5 as follows:

Fig. 19B shows a pressure versus Enthalpy graph for the invention. Referring to Fig. 19B, state point (1) is the ammonia vapor that comes out of the desorber (approximately 100 CE at approximately 5 bar), superheated already, and is then further superheated to state point (2) to approximately 300 CE and approximately 2200 kJ, where it enters the expander. In the expander the vapor expands supertropically to state point (3) at approximately -61 CE. The ~~green curves are those~~ lines of constant volumity ~~and as such relate directly~~ are directly related to the maximum and minimum volumes of the expander's displacement. The expansion likely will not follow the straight line between state points (2) and (3), but whatever other path it will follow in practice is totally indifferent, as long as the expansion ends in state point (3).

Please amend the two paragraphs starting on page 35, line 6 and ending on page 35, line 23 as follows:

If the lowest, end-expansion pressure in the expander is not the same as the counter pressure from the absorber, it naturally will be higher and then the expansion will end somewhere on the lower volumity line (v=2.0) at the right of state point (3). It cannot be anywhere else, because the expander is a displacement machine and thus the end volumity is given per design. The further the end state point of expansion shifts to the right, the lower the expander shaft output will be, but there is still a LONG way to go until it would reach the intersection for isentropic expansion (3a), as shown above. ~~We also see from this that isentropic expansion is a "hopeless case" to achieve your goal of 45+ percent efficiency.~~

In state point (3) we see that the volumity line intersects the horizontal for approximately 0.2 bar at x = 0.4 ~~(yellow line)~~, meaning that approximately 40% of the mass is in gaseous condition and hence, approximately 60% in liquid. The enthalpy of the liquid shows in state point (4), approximately -80 kJ/kg, and that of the vapor in state point (5) approximately 1375 kJ/kg. Mind that the enthalpies in the diagram above are per kilogram of mass, so the actual enthalpies must be corrected for the respective masses (approximately 550 kJ for vapor and approximately -50 kJ for liquid). The vapor at state point (5) enters the absorber~~ and we can forget about that part, as far as the ph-diagram is concerned~~.

Please amend the paragraph starting on page 36, line 1 and ending on page 36, line 13 as follows:

The liquid in state point (4) is in the receiver, from where it is pumped to the heat exchanger in the absorber, bringing it to the desorber pressure of approximately 5 bar - state point (6). ~~Why I have chosen 5 bar, I will explain in my final report.~~ The pump energy, small as it is, is neglected here (ideal case). With this pressure it enters the heat exchanger in the absorber, where it is heated to state point (7). We see that x ~ approximately 0.51 there, so around half of the liquid has evaporated already and the whole mixture is saturated at around approximately 6 CE. Some superheat will occur and gives the lowest temperature of the regenerator at approximately 10 CE and thus is the temperature of now weak solution, injected in the absorber. It is driven by the pressure difference between desorber and absorber and a flow-regulating device will be needed to adjust the mass flow. In the regenerator the liquid evaporates further and the resulting vapor superheats to finally reach state point (1) at 100 CE, where it joins the vapor coming out from the desorber and the cycle is closed.

Please delete the paragraph beginning at page 36, line 14 and ends on page 36, line 18 as follows:

~~The beauty of the whole cycle is that there is no designed exchange of heat with the environment, so, regardless whatever different a practical system might operate from the theoretical one, the energy conversion will and MUST ALWAYS be 100% in the ideal case (If continuously more heat is applied than can be converted in the expander, the system will overheat to destruction).~~

Please amend the paragraph starting on page 36, line 19 and ending on page 37 at line 4 as follows:

If the expanding gas is a saturated vapor, it will then becomes wetter (condense more) during supertropic expansion, to deliver the extra work. Water vapor (steam) is not very suitable for this, because its vaporization enthalpy is very high and so not much of its mass will condense. Ammonia vapor has about half of the enthalpy of steam and one could achieve a much more favorable mass ratio between saturated liquid and vapor (60 mass % liquid is possible to achieve). The resultant energy then would appear as torque on the shaft of the positive displacement device, (expander). A preferred goal is to have the end state of supertropic expansion reach as far as possible in the wet area of the ph-diagram.

In achieving this goal, the expander must be tolerant to any combination of vapor and liquid. Expanders such as scroll or rotary vane and the like, are saturated vapor tolerant, including any combination of liquid part and vapor part ratios from 100% liquid to 100% vapor. By the virtue of their inherent design, pockets are formed as the center of the scrolls, which fill with inlet gas. Further orbital motion of the scroll closes the filled pockets and isolates them from the inlet flow. As orbital motion proceeds, the filled pockets expand in size – producing shaft work – while gas temperature and pressure decrease. Finally, the expanding pockets are opened to the exhaust manifold. During this entire process, condensation of the vapor will occur. The resulting liquid droplets do not pose a problem because they are confined by pocket walls, which are continuously expanding. Any vapor or liquid in the exhaust can never migrate back to the inlet - as

might occur in a reciprocating engine. As vapor flows into the scroll inlet it is trapped and expanded in separate, isolated, and discrete packets that remain isolated from the inlet and exhaust manifolds. See for example, previously referenced U.S. Patent Application serial no. 10/342,954 filed January 14, 2003, now U.S. Patent 6,758,659 by one of the co-inventors of the subject invention. Rotary vane expanders accommodate liquids in much the same way as scrolls. In Fig. 20, ~~an exemplary~~ a preferred approach is shown. This is not the only way the final machine can be built, but the functions of its details are as shown here.

Please amend the paragraphs staring on page 37, line 5 and ending at page 38, line 4 as follows:

Fig. 20 is a schematic showing the ~~shows an operational arrangement~~ configuration ~~7000~~ for a ~~supertrope~~ supertropic power system 6000. The main function of absorber 6600 is to achieve a low pressure discharge (exit) condition for the expander 6400. ~~, as a condenser normally would do.~~ This low pressure discharge of approximately 0.2bar is used to achieve ~~will instead cause~~ supertropic expansion ~~condensation to occur~~ in the liquid/vapor expander 6400. The liquid/vapor expander must ~~that thus MUST~~ be a positive displacement type, with a fixed expansion ratio, which is capable of handling both liquids and vapors that occur as the result of the low-pressure supertropic expansion.

Similar to the preceding embodiments, the liquid/vapor expansion device can be a rotary ~~sliding~~ vane machine, scroll expander, or an arrangement with

reciprocating pistons, and the like. The individual components of Fig. 20 will now be described.

Heat supply 6100, which can be an Alfa Laval or RSI thermal generator, can burn ~~burning~~ a gaseous fuel or use any number of alternative fuels or heat sources including waste heat.

Superheater 6200, which can be a RSI or Alfa Laval heater, uses the heat input provided by the heat supply to heat gaseous ammonia, as received from the desorber 6300 and the evaporator 6800, to the expander inlet conditions of approximately 600°F ~~that Heats gaseous ammonia to approximately 700F~~.

Desorber 6300, which can be an Alfa Laval Desorber, is used to separate ammonia vapor from the strong ammonia-water solution received from the absorber 6600. This separation is accomplished by heating ammonia-water solution using low temperature waste heat received from the superheater 6200. The separated ammonia vapor is supplied from the desorber 6300 to the superheater for reheating. The separated weak, warm ammonia water solution, as discharged from the desorber, is circulated to the regenerator 6700/6800 for heating and vaporization of the liquid ammonia received from the receiver 6900

Regenerator 6700/6800 is a 2-circuit heat exchanger having cooler 6700 and vaporizer 6800 circuits. The weak, warm ammonia-water solution as discharged from the desorber, is passed through the cooler where the heat extracted is transferred to the vaporizer 6800 where it is used to vaporize the ammonia liquid received from the receiver tank 6900 via pump 6950. The ammonia is vaporized, in the vaporizer, a pressure that is sufficient for it to join the vapor stock feed discharged from the

desorber 6300 and is supplied to the superheater where it is reheated for reuse. In this manner, the heat of the chemosorption process (which is exothermic) that occurs in the absorber is largely recovered. The cooled weak ammonia-water solution discharged from the cooler 6700 is then supplied to the absorber 6600 for reuse in the ammonia-water chemosorption process performed in the absorber. ~~can be a heat exchanger, that takes waste heat for reuse, such as but not limited to a Alfa Laval Flat Plate Heat Exchanger~~.

Receiver 6900, which can be a stainless Steel tank ~~that~~ collects and separates the ammonia vapor from the ammonia ~~gas and~~ liquid contained in the expander outlet (exhaust). The vapor separated in the receiver 6900 is routed to the absorber 6600. The liquid separated in the receiver is routed to the regenerator via the liquid pump 6950.

Absorber 6600, which can be an Alfa Laval absorber, employs ammonia-water chemosorption to provide the low pressure discharge source needed in the expander to achieve supertropic expansion. To achieve this objective, the cooled weak ammonia-water solution from the regenerator 6700/6800 is supplied to the absorber (the low pressure generated in the absorber by chemosorption is sufficient to draw it in), and is used in the absorber to absorb the ammonia vapor received from the expander via the receiver 6900. ~~that is used to drop pressure by chemosorption~~

~~Pumps~~ Pump 6650 ~~and 6950 can be Cat pump which can be~~ is used to transfer the enriched ammonia-water solution (now a strong aqua ammonia), which is collected in the bottom of the absorber 6600 into the desorber 6300. The flow-through of the recycling pump 6650 is controlled in order to assure that the temperature in the

absorber 6600 does not exceed the evaporation temperature for the water in the absorber (approximately 60°C at approximately 200 mbar), which is also dependent on the cooling capacity of the liquid ammonia. Pump 6500 is used to transfer liquid ammonia collected in the receiver 6900 to the vaporizer 6800 contained in the regenerator 6700/6800. ~~for pumping liquid ammonia~~.

Exhaust 6350 from the desorber 6300 is discharged to the atmosphere or subsequently supplied to a co-generation heat exchanger.

Shaft 6450 connects the output shaft of the expander 6400 to an alternator 6500~~, such as an electric generator from Lite Engineering~~. The alternator 6500 can supply electrical power to various embodiments such as those described in the previous invention embodiments, such as being used to provide power to electrical grids, ~~and~~ for supplying all electrical energy, cooling and heat needs of a single residential house, commercial business or office building, as well as to a vehicle such as a car, and the like.

Please amend the two paragraphs on page 38 starting at line 5 and ending at line 23 as follows:

In Fig. 21 ~~Fig. 20~~, the desorber 6300 can contain saturated aqua ammonia and is heated to release superheated ammonia vapor at a pressure that is controlled per design of the expander 6400. The temperature in the desorber 6300 should be well below that of evaporation of water, to minimize water evaporation. Any water vapor that follows with the ammonia gas, will deliver some work in the expander 6400. As long as it doesn't interfere with supertropic condensation of the ammonia, no harm is done; otherwise an

additional separating device can be used. An additional separating device can include but is not limited to an additional heat exchanger, which used for converting combustion gasses to ammonia gas.

The vapor is superheated in the superheater ~~further, as shown~~ (to increase the thermal efficiency of the applied heat and the total power output) and then enters the expander 6400 to drive it. The expander 6400 will discharge a mixture of liquid ammonia and ammonia vapor at very low temperatures (around approximately 50 Celsius), that first will be collected in the receiver 6900, which is connected to the absorber 6600. The discharged vapor is then fed from the receiver 6900 to the absorber 6600, which by absorbtion of the vapor creates a low pressure sink of ~~an under pressure of around~~ approximately 200 mbar, which is "seen" by the expander 6400 discharge. This corresponds with 60 Celsius for saturated water and so the injected water at the top of the absorber 6600 should be well below that temperature, as it will be heated by the exothermic absorbtion process.

Please amend the first two paragraphs on page 39 starting at line 1 and ending at line 19 as follows:

To achieve this, the cold ammonia liquid in the receiver 6900 ~~6800~~, containing a lot of latent energy, could be pumped through a heat exchanger, the cooler 6700 and the evaporator 6800 located in the regenerator 6700/6800, in order to ~~that can~~ cool warm and ammonia-poor water from the desorber 6300, prior to it being sprayed into the absorber 6600 (the lower pressure there will draw it in). In this ~~the~~ process, the liquid ammonia received from the receiver 6900 evaporates at a high enough pressure to join the feed

vapor from the desorber 6300 and so it enters the superheater and begins the cycle ~~expander~~ again. In this manner the absorbtion heat generated in the absorber is largely recovered (the remaining heat energy ~~rest~~ is contained in the enriched, warmed-up water located in ~~at~~ the bottom of the absorber and will be pumped into the desorber 6300, providing approximately 100% ~~total~~ heat recovery, unless the absorber 6600 needs additional cooling to ambient.

The enriched water (an ammonia rich aqua ammonia solution), collected in the bottom of the absorber 6600 is pumped ~~back~~ by pump 6650 into the desorber 6300 and the cycle is closed. The flow-through of the recycling pump 6650 is sufficient to assure ~~should be chosen as such~~, that the temperature in the absorber 6600 does not exceed the evaporation level for the water there (approximately 60 C at approximately 200 mbar), which is also dependent ~~of course also depend~~s on the cooling capacity of the liquid ammonia. A control device, such as but not limited to a simple float switch in the absorber is ~~can be~~ used to control off the pumping rate ~~and on~~ of pump 6950. ~~6950, and can assure~~ This assures that the amount of water provided to ~~sprayed into~~ the absorber, ~~is the same as the~~ matched to the flow-through rate of the recycle pump ~~(easiest done with a level switch in the absorber, so the pump 6650 can be over dimensioned)~~.

Please amend the paragraph starting on page 39 at line 24 and ending on page 40 at line 4 as follows:

Absorption refers to a physical bond and chemosorption to a chemical bond. Both types of bonding are associated with the generation of heat (absorbtion heat). Absorption is an exothermic reaction (it gives off ~~of~~ heat) and desorption is an

endothermic one (it takes up heat). By chemosorption, ammonia gas reacts with water by forming positive ammonium ions (NH4') and negative hydroxide ions (OH^-) as follows in equation ~~equation I~~.

Please add the following paragraph on page 40 between lines 13 and 14:

Fig. 21 is a schematic showing the configuration for a supertropic power system 7000 that utilizes an additional "absorber heat exchanger", which is positioned within the absorber 6600 (as shown), and provides the means for cooling the chemosorption process and recovering the heat produced as a result of the chemosorption process which occurs in the absorber 6600. The heat energy recovered by the heat exchanger is used as an additional heating source for heating of the liquid received from the receiver prior to delivery of the heated liquid to the regenerator. In this configuration the liquid ammonia collected in the receiver 6900 is transferred to the absorber heat exchanger via transfer pump 6950 before being delivered to the vaporizer 6800 located in the regenerator 6700/6800. By adding the absorber heat exchanger to the absorber 6600, the overall configuration, functions and components shown in Fig. 21 are otherwise identical to the system shown in Fig. 20.

Please amend the paragraph starting on page 40, line 14 and ending at page 40, line 19 as follows:

Referring to Fig. ~~20~~ 21, air enters combustion blower mixed with a gaseous fuel to a combustion burner. The combustion products 6100 heat ammonia in the finned tubes of the superheater section 6200. The ammonia is heated to approximately 300 C at 5 bar.

Q3 (approximately 500KJ). This heated; pressurized ammonia liquid (approximately 5 bar, approximately 300C, volume, approximately 58M3/kg at approximately 2200KJ) now enters the expander 6400, (Scroll, Vane or other positive displacement device).

Please amend the paragraph on page 40 at lines 20-23 as follows:

This expander increases the volume to approximately 3.6 times its original input, (1:3.6). As the volume expands and the temperature drops to ~~minus~~ approximately minus 70 F, work is accomplished at the expander shaft and is transferred to the Alternator 6500 as work approximately 1700 KJ.

Please amend the paragraph page 41 at lines 8-10 as follows:

This liquid is pumped by pump 6950 to the Absorber 6100 ~~loosing~~ losing approximately 50 KJ. Temperature is ~~minus~~ approximately minus 60C. The ammonia gas from the top of the receiver 6900 at approximately 40M%, at approximately .2 bar and minus approximately 61C provides approximately 550KJ to the absorber 6100 shell.

Please amend the two paragraphs starting on page 41 at line 11-20 as follows:

The supertropic effect, created by the mixture of water and ammonia in the absorber section 6100, creates a low pressure of approximately .2 bar, allows the temperature to drop from the expander 6400 to minus approximateley -61C at approximately .2 bar. This allows the expander to work in a temperature differential of approximately 361 C. This predicts a Carnot efficiency of approximately .626 (62.6%). ~~626%).~~

This is the key to the supertropic effect created here. A normal Rankine cycle in small equipment is between approximately 10% and approximately 25% efficiency depending on the temperature differences that can be accepted by the most modern materials (approximately 1100F to approximately 212F). Even combined cycle central power plants can only expect approximately 44% efficiency before line losses to the end user.

Please amend the paragraph starting on page 41, line 21 and ending at page 41, line 23 as follows:

Referring to Fig. 21, from ~~From~~ the receiver ~~6100~~ 6900 liquid ammonia is pumped by pump 6950, to the bottom of the absorber tank ~~6100~~ 6600. Some of the ammonia gas that accumulates at the top of the receiver 6900 is connected by tubing to the absorber ~~6100~~ 6600.

Please amend the paragraph beginning at page 42, line 1 and ending at page 42, line 7 as follows:

The liquid part of the expander discharge is fed into a heat exchanger in the absorber 6600 ~~6100~~, where it will absorb part of the absorption heat, (a maximum temperature difference of about approximately 110 C. The other part is taken by the solution being warmed up. The liquid has to be returned as vapor at desorber 6300 conditions, under pressure from the liquid pump 6650, the rest of the latent heat can be used to cool down the aqueous(water) solution from the desorber thus making it weak (low ammonia in the water ammonia solution) prior to injection into the desorber 6300.

Please amend the paragraph staring on page 42 at line 17 and ending at page 43 at line 4 as follows:

Referring to Fig. 21, the ~~The~~ absorption system is self adjusting and will generate either a lower or higher counter pressure on the expander 6400. The weakened solution at approximately +60 C and approximately 20% ammonia is pumped from the absorber 6100 to the desorber at M=1.2 liters (Q8). Liquid from the receiver 6900 ~~absorber 6100~~ is pumped by pump 6950 through the absorber 6600 ~~6100~~ into the regenerator (Q5) 6700/6800 where the liquid ammonia is heated by the water flow from the desorber 6300 at approximately 1.2 liters and approximately 500KJ (Q6=Q7) through the Regenerator 6700/6800 at approximately 10 C with approximately 50 KJ (Q7) in the regenerator 6700/6800 and is mixed with the ammonia flow from the desorber 6300 (approximately 5bar, approximately 100 C, approximately 680 KJ) (Q2) before entering the superheater 6200 combining Q2, Q5, and Q6. 1020+680 =1700KJ where approximately 500KJ Q3 is added. Approximately 2200KJ leaves the Superheater 6200 to enter the expander 6400.

Please amend the paragraph on page 43 at lines 5-14 as follows:

The purpose of the desorber 6300 is to heat the liquid that is pumped to it by the pump 6650 to separate the water from the ammonia so that only ammonia vapor ~~as a strong solution~~ can enter the superheater section and be heated to approximately 300 C to complete the cycle. Combustion products not completely used in the superheater 6200 continues in a conduit to the desorber 6300 where this heat separates the water from the ammonia. This leaves the desorber 6300 as approximately 7% ammonia and approximately 1200KJ (Q1). The desorber 6300 can be constructed as a shell and tube

exchanger of a design well known to the industry. In addition ambient air can assist in the desorption action to further increase efficiency of the system in the total energy out divided by energy in as a fuel utilization efficiency.

Please amend the paragraphs on page 43 at lines 15-24 as follows:

As the flue finally exits the system 6350, additional heat exchangers can be added to extract heat for co-generation used primarily for domestic hot water generation in residential and commercial applications. This heat exchanger can be one that is ~~combustion product heat to water being heated is~~ well known in the industry and can be a plate fin as manufactured by Alfa Laval.

At supertropic expansion, under the conditions as shown in Fig. 21 ~~20~~, the expander 6400 will discharge a liquid-vapor mixture at approximately - 61 CE, or approximately 212 Kelvin . The mass ratio is approximately 60% for liquid and thus approximately 40% for vapor, both of course being saturated at a pressure of approximately 0.2 bar, or approximately 20 kPa absolute. Note, the expansion volume ratio of approximately 3.6 at a pressure ratio of approximately 25 - not possible with isentropic expansion!

Please amend the paragraphs on page 45 at lines 11-15 as follows:

Q1 heat energy entering the absorber A(8600) 1200 KJ
Q2 heat energy leaving the desorber D(8300) ~~D(8300~~ 680 KJ
Q3 heat added at the superheater 500KJ
Work equal Q1+Q3 = 2200KJ ~~2200KJ~~

Please amend the paragraph starting at page 46, line 6 and ending at page 46, line 9 as follows:

Fig. 23 ~~22~~ shows another version of the supertropic power system 9000 of the preceding figures with a gas/air mixture heat source and superheate~~o~~r based on forced gas/air combustion. The components of Fig. 23 ~~22~~ will now be described, and are similar to those previously described in reference to Fig. 20 and 21 .

Please amend the paragraphs starting on page 46 at line 20 and ending on page 47 at line 2 as follows:

20HP ~~scroll~~ expander 9400 can be a scroll type expander ~~a Copeland type expander~~.

15KW alternator can be a Light ~~Lite~~ Engineering motor.

The operation of the system in Fig. 23 ~~22~~ is described as follows. Air 9050 enters combustion blower 9100, and can be mixed with a gaseous fuel 9125, such as natural gas, propane, and the like, to a combustion burner 9150. The combustion which can produce heated ammonia in the finned tubes 9250 of the superheater section 9200. The ammonia can be heated to approximately 700 F at approximately 75 psi.

Please amend the paragraphs starting on page 47 at line 3 and ending on page 47 at line 19 as follows:

This heated, pressurized ammonia liquid now enters the expander 9400, (such as but not limited to a Scroll, Vane or other positive displacement device). This expander 9400 increases the volume to approximately 3.6 times its original input. As the volume

expands and the temperature drops to ~~minus~~ approximately minus 70 F, work is accomplished at the expander shaft 9450.

This shaft 9450 can be hermetically sealed from ambient air conditions by a magnetic seal device, such as but not limited to a Ferro Fluidics ~~fluidics~~ seal, and the like. The shaft 9450 rotation can be connected to a highly efficient electric generator 9500 such as an alternator that was previously described producing A/C or D/C electric current.

The liquid leaving the expander 9400 can be collected in a receiver 9900, which can be a mixture of approximately 60% liquid and approximately 40% vapor.

The supertropic effect, using ~~created by the mixture of water and ammonia in~~ the absorber section 9600, can create a low pressure of approximately 3 psi, allowing the temperature to drop from the expander 9400 to ~~minus~~ approximately minus 70F. This allows the expander 9400 to work in a temperature differential of approximately 770F, which predicts a Carnot efficiency of approximately .626 (62.6%). The Carnot efficiency can be the result of (700+460)minus (70+460) divided by (700+460) = .626 or 62.6%

Please amend the paragraph on page 48 at lines 4-10 as follows:

The liquid part of the expander 9400 discharge is fed into a heat exchanger in the absorber 9600, where it will absorb part of the absorption heat, (a maximum temperature difference of about approximately 230F) ~~230F~~. The other part is taken by the solution being warmed up. The liquid has to be returned as vapor at desorber 9300 conditions, under pressure from the liquid pump 9950, the rest of the latent heat can be used to cool

down the aqueous(water) solution from the desorber 9300 thus making it weak (low ammonia in the water ammonia solution) prior to injection into the desorber 9300.

Please amend the paragraph on page 48 at lines 21-24 as follows:

Referring again to Fig. 23 ~~22~~, liquid from the absorber 9600 can be pumped by pump 9950 through the absorber 9600 into the regenerator 9700 where the liquid ammonia is heated by the water flow from the desorber 9300 in the reclaimer 9700 and is mixed with the ammonia flow from the desorber 9300 before entering the superheater 9200.